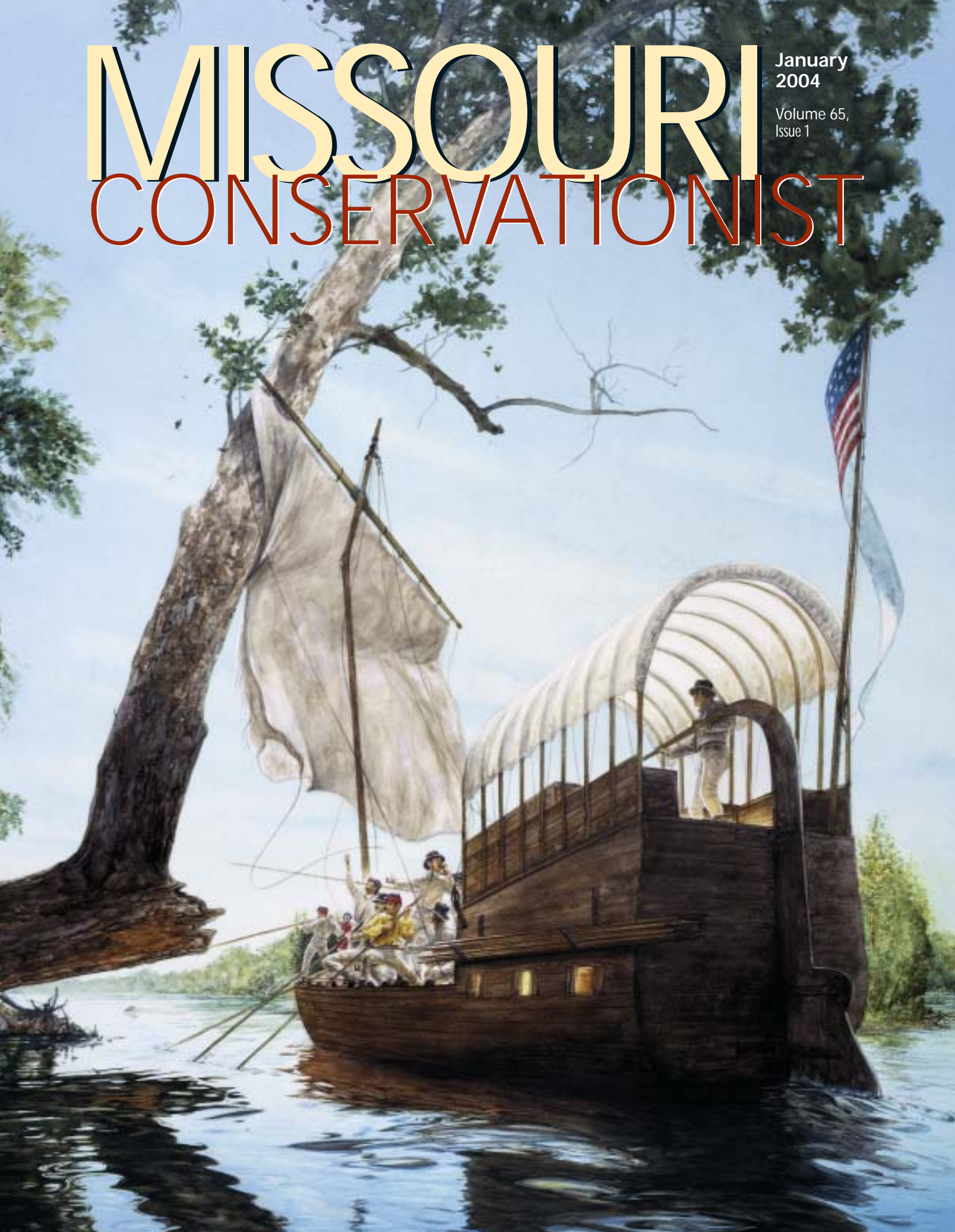


MISSOURI CONSERVATIONIST

January
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Volume 65,
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Continuing the Voyage of Discovery

Two hundred years ago, Meriwether Lewis and William Clark were preparing for an expedition into the recently acquired lands of the Louisiana Purchase. The primary mission of the Corps of Discovery was to explore the new territory, and to record what they found there. In other words, they were gathering information.

The Missouri Department of Conservation's Resource Science Division, established by Director John Hoskins in fall 2002, shares many of the same mandates given to Lewis and Clark by President Jefferson. The newly created division integrates parts of the former Natural History Division, the Forest, Fisheries and Wildlife Research sections, and the Geographic Information System group. This new division's mission is to provide the science-based information needed to conserve, appreciate and effectively manage the living resources of Missouri.

Like Lewis and Clark, we are exploring Missouri and recording what we find.

We're gathering information about a different environment than the one seen by the Corps of Discovery. Unfortunately, most of the habitat changes over the past 200 years are best described as losses. Nearly 90 percent of the wetlands existing at that time are now gone, and less than 1 percent of the native prairie remains. Most of our forest habitat has been insulated from periodic and invigorating disturbances of fire and flood.

Some of the 300 new plants and animals described by Lewis and Clark have nearly or completely disappeared. For example, the explorers recorded "a great number of parrot queets." The Carolina parakeet, the species they described, is now extinct.

Today, we closely monitor species of conservation concern and manage land on their behalf. Perhaps our efforts will save our state's imperiled species from the fate of the Carolina parakeet.

Knowledge acquired by the Resource Science Division today will be essential to ensure sound wildlife management and to prevent further loss of Missouri's diverse plants and animals. We need to understand how habitats and natural processes have changed so that we can preserve and enhance the natural resources that remain.

Our goal is to provide the kind of information necessary to support management of our fish, forest and wildlife resources. For example, the Resource Science



Division plays an important role in recommending the seasons, bag limits, and hunting and fishing methods that keep our wildlife populations at desirable and sustainable levels.

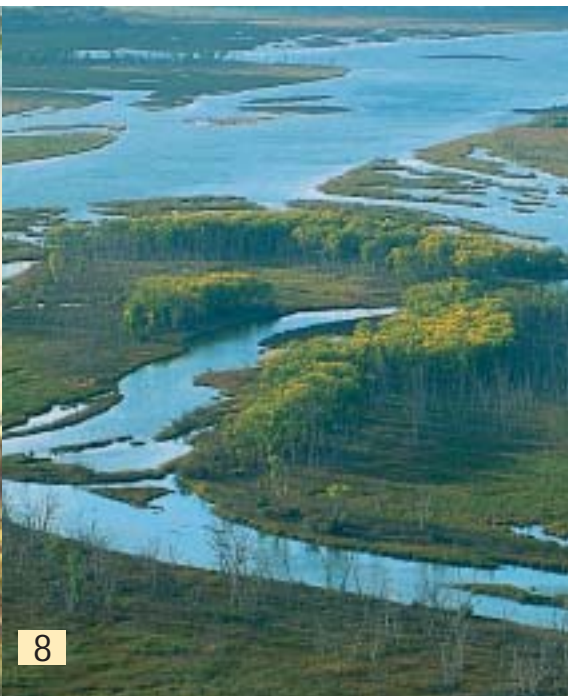
We have better tools for information gathering than Lewis and Clark had. Our "journals" now are electronic. Our databases, models and predictive equations allow us to create "layers" of ecological and cultural information. Thanks to computers and communications equipment, resource managers have ready access to reliable, repeatable and documentable information.

As we read the journals of Lewis and Clark and learn from their landmark exploration, we might wonder how helpful the information we're gathering now will be for natural resource managers 200 years from now. The Resource Science Division operates under the belief that scientific information is always valuable. In Missouri, it is the foundation underlying all our present and future fish, forest and wildlife management.

Dale D. Humburg, Resource Science Division Administrator



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NEBRASKA Land Magazine/Nebraska Game and Parks Commission photo



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LIVING ON THE EDGE

I want to say thank you to the Conservation Department for the wonderful book on quail, "On the Edge." It has the best information on quail that I have ever read, and it was free!

This shows why we in Missouri enjoy the best conservation in the country.

Arvil Kappelmann, Washington

Editor's note: For a free copy of "On the Edge," write Publications, P.O. Box 180, Jefferson City, MO 65102-0180, or email <publications.staff@mdc.mo.gov>.

SAVED, THE MERAMEC

I, too, am glad the Meramec Dam project was cancelled. First, because we really enjoy the upper Meramec. Second, because we were lucky enough to purchase a parcel of this land when it was auctioned off in 1987.

Missouri has several large lakes, all created by damming up beautiful, scenic rivers, creeks and streams. We lost caves, wildlife habitat, bluffs and places to seine for fish, but we gained fishing, boating, water recreation, stores, hotels and tourism on some of the most beau-

tiful lakes I've ever been on.

I just wonder if the Meramec project had gone through, would we look back and wonder if we shouldn't have done it.

Dave Decker, St. Louis

FOREST HERO

Your article about Leo Drey is wonderful. Having had the privilege of knowing Leo for many years, I believe you have captured his spirit, offered his outstanding example up to others for inspiration, and given all of us who admire him a fine memento of lasting value.

John Karel, St. Louis

Thank you for the article about Leo and Kay Drey. The forest management and conservation practices they have promoted should be a lesson for everyone. Also, their generous donations of land for public use has benefited us all.

W. Dudley McCarter, St. Louis

BRIDGE TO THE PAST

"The Bridges Place" John Hoskins speaks of in his editorial is a very important part of my family's history. I am a descendant of Andrew J. Bridges via my

grandmother Vesta (Bridges) Stevens.

The Bridges Place and the surrounding areas hold a lot of memories for me. Thanks to the conservation efforts of the Hoskins family, I can look forward to someday taking my grandchildren to the place where their great-great-grandmother grew up.

Darin Stevens, Doniphan

RED-FACED

My husband and I enjoy reading the Conservationist and look forward to the fabulous photos of the birds and flowers. We think you do a great job of teaching people about our state's natural resources.

However, I was surprised to see on page 7 of the November issue the red-bellied woodpecker identified as a "red-headed woodpecker."

I bet I'm not the only "birder" to notice.

Ann Read, Rolla

Editor's note: No. You are not. There were others—many others. Now we're waiting to find out how many readers will know that what we called an eastern meadowlark on page 22 of the December issue is actually a western meadowlark.

LEARNING A SECRET

My 9-year-old son, Sam, went deer hunting for the first time this year and harvested a button buck. He couldn't have been happier if it would have been a 200-class deer, and I couldn't have been more proud.

He sat still from 6 a.m. until 5 p.m., when he shot his deer. A couple of times during the day, I laid my head back and closed my eyes, but it wouldn't be long before I would feel a tap on my leg and hear my son say, "Dad, are you awake?"

After he shot his deer I told him how proud I was that he was able to sit so long and so quietly. He told me that after reading "The Real Secret to Deer Hunting Success" in your magazine, he believed his deer could show



FAMILY PHOTO

Dee Campbell of Dewitt sent in this photo of a family of eastern screech owls. A well camouflaged male can be seen in the lower right portion of the picture. She said the "Century Farm" she lives on has been awarded the National Wildlife Federation's certificate of achievement for its backyard wildlife habitat.

up at any second, minute or hour. Thank you for helping make Sam's first deer hunt so successful.

Dave Montgomery, Farmington

BIRDER ID

I enjoyed the article on Pete Winter, and that's a great picture of him on Page 4 of your December issue. However, the picture on Page 6 shows Pete's brother-in-law, Bud Taylor. Bud lives on the Roaring Spring Ranch, near St. Clair, and helps Pete maintain the bluebird boxes.

Howard Sanders, Steelville

I read with interest the article on Mr. Winter and the bluebirds. Having grown up and still living in Fenton, I am quite familiar with the Winter name and park



and gravel business but did not know about his interest in bluebirds.

Yesterday as I was leaving the driveway, there on my trash container, was a bluebird, the first I've seen in years. (We've lived at this location since 1964.) My husband has seen them periodically on his walks.

Vera Mater, St. Louis

The letters printed here reflect readers' opinions about the Conservationist and its contents. Space limitations prevent us from printing all letters, but we welcome signed comments from our readers. Letters may be edited for length and clarity.

Ask the Ombudsman



Q: Is it true that the Missouri Department of Conservation is doing away with the deer season farm tag?

A: The Conservation Department liberalized the "farm tag" landowner privilege this past season so that qualifying landowners could take either a doe or a buck (one deer total).

Previously this privilege was limited to only a buck for those landowners with at least five acres but less than 75 acres. Starting in fall 2004, free landowner permits will be required for all deer (and turkey) hunting seasons. We're requiring landowners to pick up a permit and provide some basic information so we can accurately gauge hunting pressure and success. With the old system, we only had a record of the landowners who were able to "farm tag" a deer. The new system will provide valuable input from all landowner hunters.

Deer permits become available in July, which means landowners have at least four months to pick up their free permit from permit vendors. Landowners of 75 or more acres will also be able to pick up their landowner any-deer and bonus permits at vendors, or they may continue to apply to the Conservation Department. The 2004 Fall Deer and Turkey Hunting Information booklet, which also will be available in July, will provide more details on landowner privileges.

Ombudsman Ken Drenon will respond to your questions, suggestions or complaints concerning Conservation Department programs. Write him at P.O. Box 180, Jefferson City, MO 65102-0180, call him at 573/522-4115, ext. 3848, or e-mail him at <Ken.drenon@mdc.mo.gov>.

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Printed in USA

By
Shannon
Cave

Lewis &



Art courtesy of Michael Haynes Photo courtesy of Missouri Historical Society

Clark in Missouri



Passage
through
Missouri
prepared



THE CORPS OF DISCOVERY

crew for
its epic
journey.

During their ascent of the lower Missouri River, a group of young, inexperienced soldiers became a disciplined team of navigators and explorers.

Lewis and Clark moved through what would become the state of Missouri in about 10 weeks, but this area was both a launching point and an important testing ground for the rugged explorers that comprised the Corps of Discovery. They learned lessons here that helped prepare them for their expedition to the Pacific Ocean and back.

As early as 1792, Thomas Jefferson dreamed of sending an expedition up the Missouri River and on to the Pacific ocean. He knew how important it was to explore the western frontier of our young, developing nation. He believed that resources in the west could fuel growth and help secure peace for the entire country.

The Louisiana Purchase of 1803 accelerated plans to send a group of explorers into the region west of the Mississippi River. Jefferson directed his personal secretary Meriwether Lewis and Lewis's friend, William Clark to lead an expedition to the lands west of the Mississippi River.

Jefferson wrote more than 2,000 words of instructions to Lewis before the Corps of Discovery departed. The full text of his instructions is available at <[lewisandclark-](http://lewisandclark-trail.com/legacy/letter.htm)

trail.com/legacy/letter.htm>, but instructions began:

"The object of your mission is to explore the Missouri river, & such principal stream of it, as, by it's course & communication with the water of the Pacific ocean may offer the most direct & practicable water communication across this continent, for the purposes of commerce."

The expedition members wintered at Camp Dubois on the east bank of the Mississippi River during the winter of 1803-04. They departed on their epic voyage up the Missouri River on May 14, 1804.

Historians typically focus on Corps of Discovery events that occurred west of Missouri. In doing so, they omit some good stories and key events. The trials the expedition faced in Missouri had the potential to abort the entire mission. Instead, they laid the foundations of caution, determination and teamwork that allowed the expedition to proceed toward a successful conclusion.

Lewis, for example, nearly fell to his death only a few miles from St. Charles. Had he not survived, the mission likely would have been scrapped. More than once, the expedition's keelboat narrowly escaped destruction. While in Missouri, the crew also had to resolve disciplinary problems and learn to work as a team. Here they also met Indian bands and traders of mixed nationality, constantly gathering critical information about what lay ahead.

In Missouri, even before the expedition officially departed, the explorers found their first botanical species previously unknown to science. They discovered the Osage-orange tree (*Maclura pomifera*) across the river from their winter camp on March 26, 1804.

Their first documented "new species" of animal was the eastern wood rat (*Peromyscus gossypinus*), noted in what is now Callaway County. In what is now the northwest corner of the state, Lewis and Clark first heard the calls of a coyote. In 1804, coyotes were not known in Missouri, or east of the Mississippi. Today they live in all of the lower 48 states. Expedition journals often mention wolves, black bears, cougars, bison and elk. Near today's Kansas City, the explorers also saw flocks of colorful Carolina parakeets, a species now extinct.

At Columbia Bottom Conservation Area, a new overlook allows visitors to see the confluence of the Missouri and Mississippi rivers, the starting point of the expedition.

In 1804, the Mississippi River flowed in the middle of what is now the conservation area, so there is little doubt that the expedition crossed some of this land by water. Its members reconnoitered and hunted the same lands on foot or horseback as they hunted around their winter camp a couple of miles north.



Lewis and Clark recorded more than 300 species new to science. Near present day Kansas City, the explorers spotted flocks of the now extinct Carolina parakeet.



Eastern Wood Rat



Meriwether Lewis

Lewis, along with other members of the expedition, kept journals with which to report their findings back to the President. While in Missouri, they wrote that the landscape “is beautiful, bountiful and a good place to build homes.” Their journals enthusiastically describe the lush forests, expansive prairies, oxbow lakes and rich grasslands along the Missouri River. The writers spelled “beautiful” in many ways (even “butifull”), but the word was their common adjective for lands of the future state of Missouri.

People today often don’t fully appreciate the power, the beauty and the hazards the Missouri River once presented. Lewis and Clark encountered a river that had no upstream dams, dikes or riprapped banks to control its flow or its floods. Even through the 19th century, the naturally flowing river devoured hundreds of steamboats, and many pilots who traveled the river once chose never to return. Today the river is tame by comparison, but it still requires skill to navigate.

In 1804, the Missouri River was generally wider and shallower, and its flow was much less uniform. Today’s river is pinched by levees, dikes and riprapp to maintain a



William Clark



American Bison

As they traveled, Lewis and Clark gathered information about the river and nearby lands from trappers and traders.



Art courtesy of Michael Haynes Photos by Jim Rathert

narrow, deep and fast flowing channel. The natural river had roaring rapids, huge eddies, islands and backwaters.

In some ways, upstream travel in keelboats and canoes would have been easier then because the force of the current varied across the wide river. Expanses of shallow water allowed a crew of wading men to pull the boats along with ropes. In fact, eddies in the river sometimes helped move boats upstream.

However, keelboats often “grounded” on those same shallows. Other hazards included sand bars that constantly shifted, banks that unexpectedly caved in, and dislodged trees. These trees often became “sawyers,” logs lodged in the mud with jagged limbs pointing downstream. They could rip holes in any passing boat.

The expedition faced a steep learning curve. Only a few days out, its boat lodged on a sand bar. When the sand shifted, the current ripped the boat loose and spun it around three times before the crew regained control. Had it rolled over and been torn apart in the current, or had its hull been splintered by a sawyer, the expedition might have ended right there.

As they ascended the lower Missouri, the crew learned how to navigate the river and depend on one another. By the time they left the borders of what would be Missouri in July 1804, this group of young, inexperienced soldiers

had become an experienced, efficient and indomitable crew of rivermen.

The expedition made careful records and maps of the river and lands nearby. Lewis usually walked on shore. Clark commanded the boats. Hunters on horseback ranged inland. They all gathered and reported information. Wherever they could, the leaders climbed to high points to get a clear view up and down stream and take precise angular readings.

On one such climb near St. Albans, Lewis slipped and took a near tragic tumble. A trail on Weldon Springs Conservation Area and a high point on Engelmann Woods Natural Area are near, and perhaps in sight of the bluff where he fell. Other great overlooks include new trails to the top of the bluffs at Grand Bluffs and Diana Bend conservation areas, and a new State Historic Site at Clark's Hill, overlooking Smoky Waters Conservation Area.

Thirty of the expedition members who left St. Charles in 1803 made it to the Pacific and back. Those returning, with the exception of York, Captain Clark's slave, received both pay and a warrant for land. Many chose Missouri land—first choice among many wondrous lands seen. Lewis became Governor of the Missouri Territory, but he died a couple years later. Clark became territorial governor and ran, unsuccessfully, in Missouri's

first gubernatorial election. He was a key frontier figure in U.S. relations with Indians for more than three decades.

York remained several years in St. Louis before he left as a free man. George Shannon, who is buried in Palmyra, was the youngest soldier in the group and later became an attorney and Missouri State Senator. John Colter had many adventures out west, including making the first report of today's Yellowstone National Park. He later settled in Franklin County, where he was buried and some of his descendants live today.

After leaving Missouri in 1804, Lewis and Clark wintered in North Dakota. There, they added Toussaint



Art courtesy of Michael Haynes

The Corps of Discovery established contact with native people along their route. Usually the contacts were peaceful.



Bob Brown Conservation Area

Jim Rathert

Revisiting the Missouri River

The bicentennial celebration of the Corps of Discovery offers a good reason to experience the river that Lewis and Clark traveled. Many communities along the river have comfortable riverfront parks where, after a few minutes relaxing on a bench, visitors can almost envision a keelboat appearing on misty water.

Many conservation areas preserve wetlands, oxbow lakes and bottomland forests that were common in 1804. Some features Lewis and Clark saw are hard to find. For example, the bottomland forests of today are much smaller and fragmented. Weston Bend State Park offers a striking overlook of an old-growth forest, which is preserved on Fort Leavenworth in Kansas.

Oxbow lakes were common havens for waterfowl, wading and migratory birds as well as other wildlife. This same rich diversity can be found today at oxbows in Grand Pass, Cooley Lake and Little Bean Marsh conservation areas, or in Lewis and Clark State Park.

Almost all of Missouri's native prairies have been cultivated for many years, making prairie vistas described by the journals hard to find. The Conservation Department's Star School Hill Prairie, near Rock-

port, is one of several conservation areas where a visitor can see and begin to appreciate prairies like William Clark described. Squaw Creek National Wildlife Refuge also contains rich prairie land.

Traveling the river by boat will allow you to fully appreciate both the beauty and the hazards faced by the expedition. Motorboats make river travel easier, but the Missouri River still requires a healthy respect for safety. About 40 Conservation Department accesses to the Missouri, along with community owned and private ramps, provide many good options for launching boats on the river.

River sandbars are especially good places to explore. The river is constantly rearranging and uncovering materials and artifacts as it flows along. You might find a fossil from Montana, a fragment of a steamboat wreck, a bone from an Ice Age mammal, tools used by early native Americans, or at least some sense of wonder experienced by the expedition itself.

It's never far from a ramp to a quiet wilderness. Expect to be pleasantly surprised by the natural beauty of the river, its great fishing opportunities and the variety of wildlife viewing it offers.

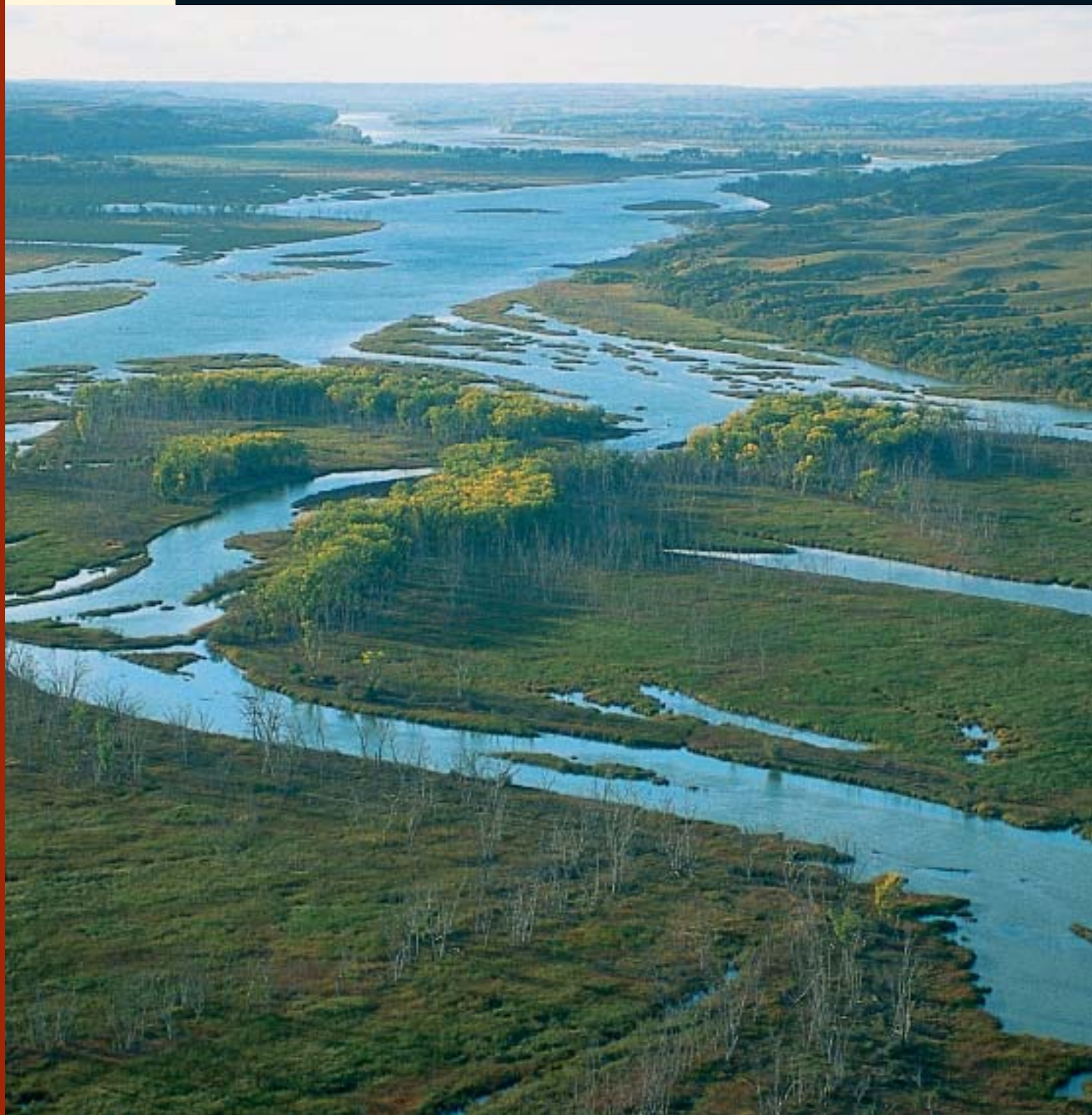
Charbonneau, Sacagawea and their newborn son, Jean Baptiste, to the Corps of Discovery. She carried the baby to the Pacific and back. When he was older, his parents brought Jean Baptiste to Missouri to be educated. He later guided many important expeditions to the far west.

The Corps of Discovery was the first, but not the only, important expedition to explore Missouri. In 1806, while

Lewis and Clark were still returning through the Rocky Mountains, Zebulon Pike went up the Osage River, exploring what is now western Missouri, on his way to Colorado. In 1818, Henry Rowe Schoolcraft explored the interior of the Ozarks. All these expeditions kept records and provided additional important information about our state and its natural resources. ▲

By
James D.
Harlan

THE Wild



Art courtesy of Michael Haynes, NEBRASKAland Magazine/Nebraska Game and Parks Commission photo

Missouri



The river
Lewis
and
Clark
traveled
was



SURPRISINGLY & UNPREDICTABLY

different
from the
river of
today.

Portions of the
Missouri River in
Nebraska (left)
remain similar to
the wild river the
explorers faced.

If only we could see the Missouri River as the members of the Lewis and Clark Expedition saw it. The notes and journals of those early explorers described a big, wild, and treacherous waterway that would intimidate the most experienced river travelers.

As daunting as it was, the old Missouri was destined for use as a portal to the American West by explorers, traders and settlers as the United States began its westward expansion. This has led the Missouri River through a long series of human modifications that produced the more bridled river that we know today.

Probably the first Europeans to describe the Missouri River and its surrounding land paddled down the Mississippi from the north in two canoes in 1673. These were early French explorers under the charge of Louis Jolliet and Father Jacques Marquette. As the men

passed near present day Alton, Illinois, they gazed at pictographs of huge monsters painted on the rocks of the Paysa Bluffs. Marquette wrote:

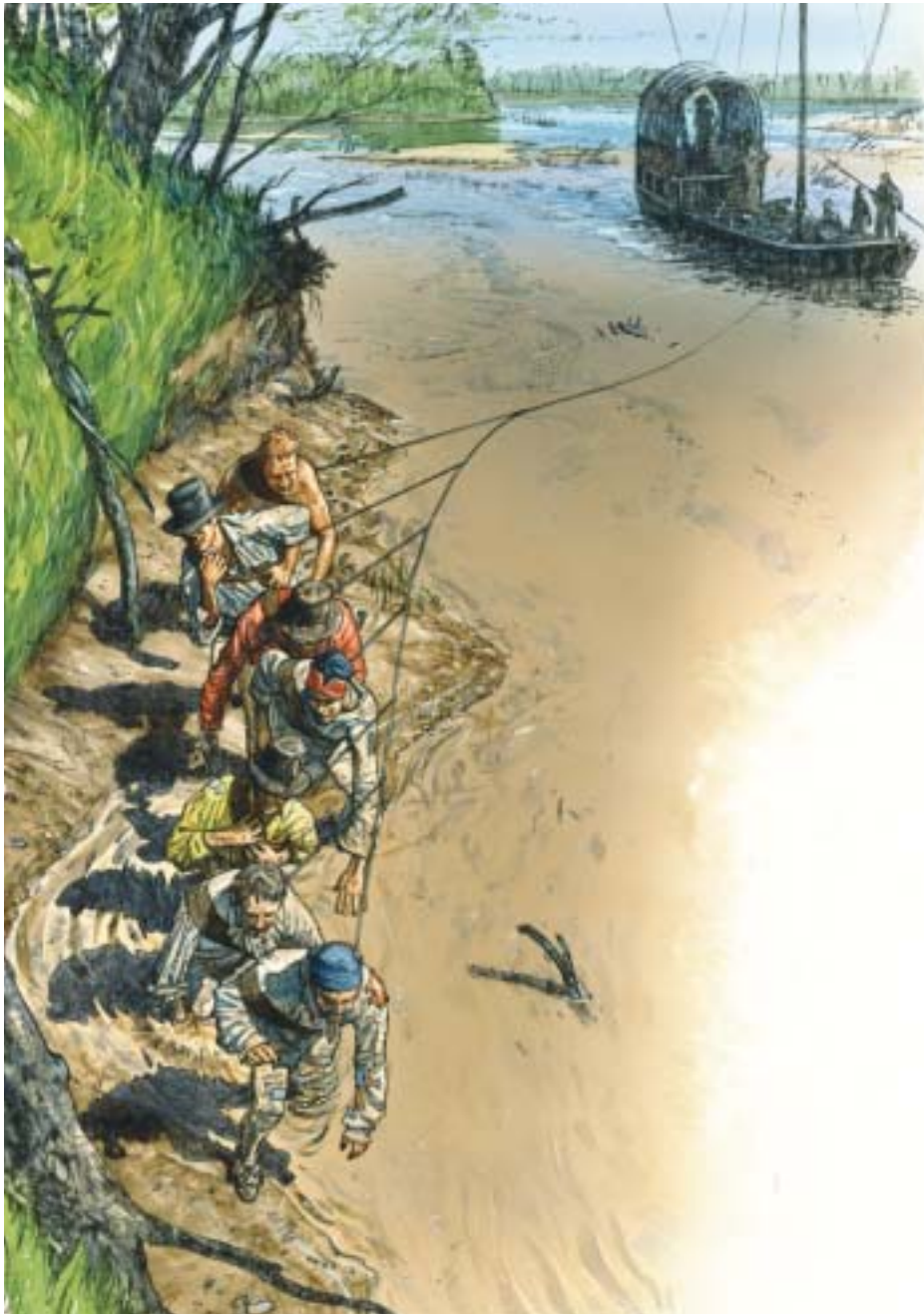
“As we were discoursing of them, sailing gently down a beautiful, still, clear water; we heard the noise of a rapid into which we were about to fall. I have seen nothing more frightful; a mass of large trees, entire, with branches, real floating islands, came rushing from the mouth of the river Pekitanoui [the Missouri], so impetuously, that we could not, without great danger, expose ourselves to pass across. The agitation was so great that the water was all muddy and could not get clear.”

This description is consistent with those of William Clark in his notes during the 1803-1804 winter at Camp DuBois. There, he observed that the swift current of the Missouri pushed massive amounts of debris, ooze, mud, sand, and thick chunks of ice all the way across the Mississippi, often blocking the mouth of the little River DuBois (Wood River).

On Feb. 8, 1804, Clark was happy to report that *“if the present fresh [rain] continues a few days, the water passing down this Small river will Wash off all that immense quantity of mud which has filled up its mouth for 300 yards by the Missouris ooze or mud.”*

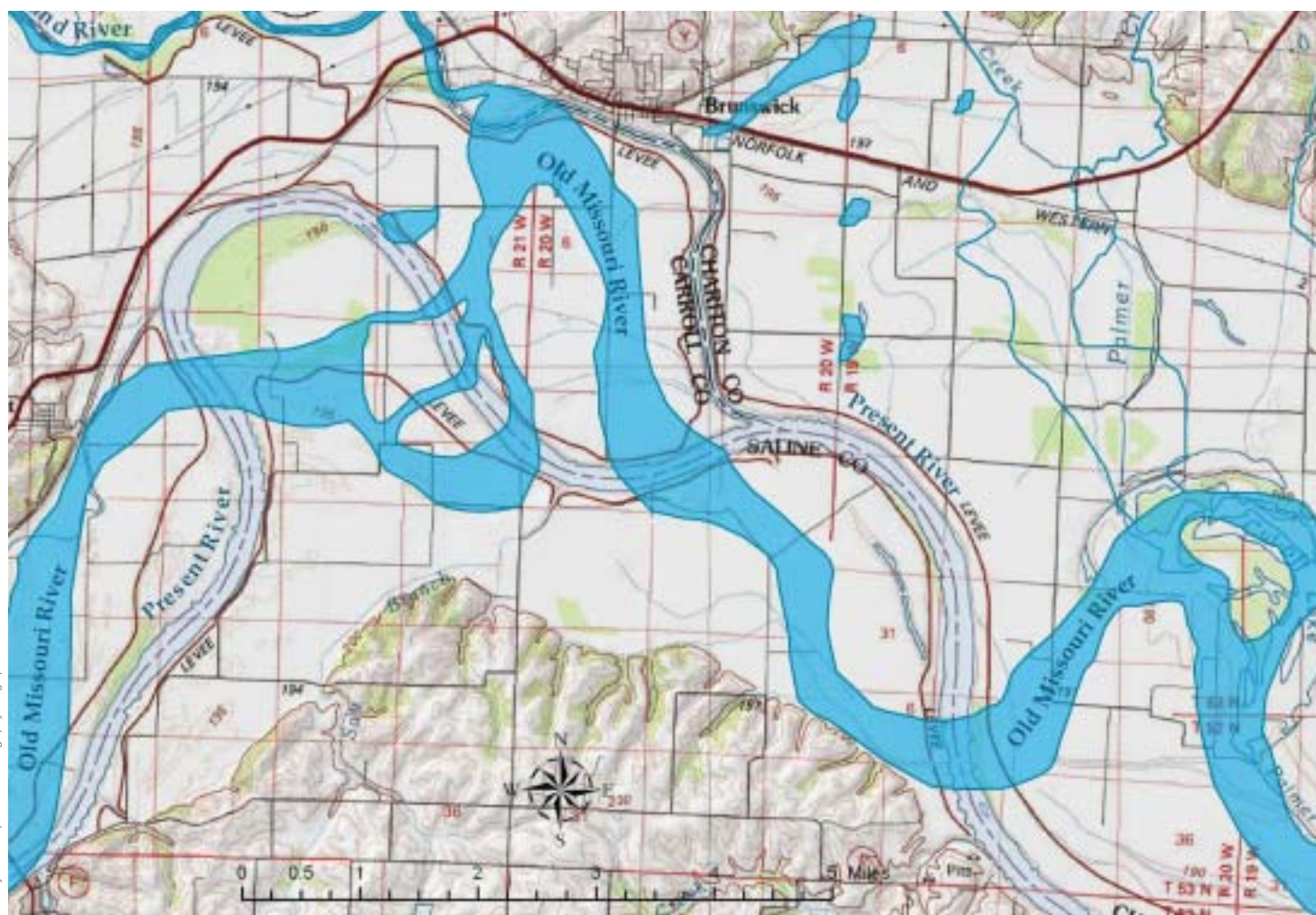
From the beginning, the Missouri River taught many harsh lessons to the Corps of Discovery crew. Their daily entries nearly always mention some peril the river presented. On May 15, Clark noted, *“the barge run foul three several times—on logs, and in one instance it was with much difficulty they could get her off..., tho’ the barge was several minutes in eminent danger.”* It was a rare day for the Corps of Discovery not to experience hardship and danger from an extremely violent and unpredictable river.

Looking at the Missouri River today, it is hard to imagine its being so tempestuous and dangerous. That’s because the Missouri River today bears little resemblance to the river of the early 19th century. For the past two centuries, we have steadily worked to mold or engineer



Art courtesy of Michael Haynes

Men walking the muddy banks often “powered” the boats upstream.



The author's map-image of the Missouri River at the mouth of the Grand River, near Brunswick, shows how the river has changed. Two hundred years ago, the Lower Missouri was about 50 miles longer and three times wider than today's river.

the Missouri River into a more predictable stream that would serve the needs of commerce, transportation, agriculture and recreation.

The differences between the river then and the river now are evident in hard statistics from the mouth of the Missouri River to the northwest corner of our state.

	THEN	NOW
Centerline Length	547.264 miles	543.832 miles
Bank/Water Edge	1,673.255 miles	1,230.395 miles
Water Area	180,793.906 acres	68,380.227 acres
Total Area	230,279.015 acres	70,025.939 acres
Average Width	.6575 miles	.2011 miles

The early river statistics were calculated from the compiled data of the U.S. General Land Office surveyors who measured down to the survey link (7.92 inches) the locations of the Missouri River banks, as well as the

banks of most of the large islands, that existed in the early 19th century. The present river statistics were calculated from digitized representations of the river from contemporary aerial photography.

The old lower Missouri River was about the same length as it is today, but contemporary research has concluded that it should have been as much as 50 miles longer. The bank, or water edge, that is so important to both aquatic and terrestrial wildlife was more than 400 miles greater then. The actual water area then was more than 2.5 times larger than that of today. The immense area that the old river actually occupied, including the many big islands, was more than 3.5 times greater than today. On average, the river was more than three times as wide as today.

In addition, information from the old surveyor data and the notes and journals of the Lewis and Clark Expedition indicate that the old Missouri River was quite often higher in elevation than the adjacent bottomland.



Jim Rathert

For the sake of navigation and flood control, we've created a tidy channel in place of a meandering Missouri River.

Indeed, most of the tributary streams show evidence of this by traveling downstream and parallel to the Big Muddy for miles, thus forming many old lakes, ponds, sloughs, and swamps.

For example, the Little Platte River (in present Platte County) flowed parallel to the Missouri River for more than 10 miles, leaving a narrow strip of bottomland that Clark called “Slaik’y” (swampy, miry, or muddy).

Lewis also prominently noted this phenomenon when he rode out to the Nishnabotna River on July 16, 1804 (in northwest Missouri) and concluded that he was “at least 16 feet lower” than the Missouri and only about “300 yards” away. At that time, the Nishnabotna flowed almost 20 miles farther south than its current course before it entered the Missouri in a swampy, delta-like configuration.

The current of the old Missouri River and all its swirling sandbars, caving banks, snags, embarras (floating-debris islands), and sawyers (bobbing trees embedded in the river) were formidable obstacles to any river traveler at that time. Only after the Corps of Discovery had passed the mouth of the Platte River (in present day Nebraska) did the river assume a more placid nature.

There, they noticed a significant change in the velocity of the Missouri River. Lewis wrote that the Missouri was moving at 5.5 miles per hour below the Platte and decreased to 3.5 miles per hour above it. The tempestuous Platte River was measured to be flowing at 8 miles per hour (twice his measurements of the Mississippi River) pushing great quantities of sand and debris all the way across the wide Missouri. Lewis estimated that the speed of the old Missouri current increased to 6.5 to 7 miles per hour at the Kansas River and flowed at 5.5 to 6 miles per hour from the Osage River to the Mississippi confluence.

William Clark had also previously recorded several measurements of river velocity up to that point. At their campsite of July 16-17, 1804, Clark measured the “common current” using the logline near what is known as McKissick Island in Atchison County. Clark called it “Bald Island.”

He found that the Missouri River ran at 50 fathoms (300 feet) in 40 seconds at one spot. In other places, the log took only 30 seconds and, at times, even 20 seconds, to run the same 50-fathom distance. Assuming that

Clark’s fathom was equal to about six feet, the current was flowing at speeds of 5.11, 6.82, and 10.23 miles per hour at his respective locations.

More dramatic are the river velocity readings that Clark took on June 17, 1804, just northwest of and across the river from the present town of Waverly (named “Rope Walk Camp” by the Corps). Using his survey equipment and a stick to measure the speed of the water, Clark found that the most rapid part of the river would float a stick at 48 survey-poles and 6 feet (798 feet) in 23 seconds. That is equal to 34.7 feet per second or 23.66 miles per hour. That figure is seemingly incredible since it approximates the velocity of water at the edge of a waterfall. Nevertheless, it is illuminating and somewhat ironic that three days later, Clark observed and wrote down that the Missouri River “riffled and roered like a great fall.”

These days, the swiftest parts of our present Missouri River are found at the ends of the river dikes, where the water breaks over and around these structures. There, recorded water velocities are often about 3 meters per second (9.84 feet per second or 6.7 miles per hour). The overall velocity of the present river current, of course, is much less than that.

Comparing the velocity of the Missouri River now to that of the river in the 19th century is by its nature inexact. For example, we now measure the river’s velocity at differing horizons within the river’s depth, not by floating a log or stick downstream. Moreover, the old Missouri River most probably was a much more complex stream than what it is today. Quite likely, water flowed at different speeds at any given location, whereas today, water speed is more uniform.

Nevertheless, the historical records indicate that the early 19th century Missouri River should definitely not

be considered as a slower river than the one we have today. In fact, most evidence points to its flowing much faster. Possible explanations for increased velocity would be that the river was carrying more water than now.

It surely must have been invigorating to experience a journey on the old Missouri River. Our modern society, however, would not tolerate such a wild and temperamental river. However, you can relive how the Missouri River used to be by reading the timeless journals of the Lewis and Clark expedition. ▲

The Missouri River today bears little resemblance to the river of the early 19th century. For the past two centuries, we have steadily worked to mold the Missouri River into a more predictable stream that would serve the needs of commerce, transportation, agriculture and recreation.



the Essential white-tailed DEER



Jim Rathert

Peering through the green leaves of the river bottom forest, the hunter searched the edge of the densely wooded hillside. The rain had stopped. Mist and low clouds moved rapidly south as a north wind pushed the summer storm ahead of it, rippling across grasses and wildflowers.

Water dripped occasionally from the massive hackberry tree under which he had taken refuge, threatening to dampen the priming in the lock of his muzzle loading rifle. Flipping back the frizzen, he quickly inspected the powder in the pan and then closed it again. The powder was dry and would ignite if he needed it.

"When Daniel
Boone goes by,
at night,
The phantom
deer arise
And all lost,
wild America
Is burning in
their eyes."

—Stephen Vincent Benét

By Kyle Carroll
Illustrations by Dave Besenger

Already the woods were coming to life after several hours of rain. A slight movement at the dark forest edge riveted his attention. A few moments later, he made out the doe's ocher-colored head as she flicked at the flies with her ear. When she stepped out into the open, he slowly raised his rifle...

This hunt could have taken place a few months ago, during the muzzle-loader portion of the deer season, or 200 years ago, when the Lewis and Clark expedition traveled up the Missouri River. White-tailed deer were abundant then and are again abundant today.

The white-tailed deer was without a doubt the most important wild animal during the settlement of Missouri. For the first frontiersmen, as well as for tribes like the Sac, the Fox, the Osage and the Missouri's, the white-tailed deer meant survival.

Trappers and voyageurs also depended on the dried meat of deer for sustenance as they probed up every stream and river that fed into the immense Missouri river drainage. They made knife handles from the antlers of deer and wore moccasins of deer skin.

More than any other animal, white-tailed deer were the reason these hunters stalked the shadowy edges of the hardwood wilderness. They also hunted elk and buffalo and trapped beaver and otter, but deer skins were a valuable medium of exchange. So common was the known value of a skin (about one dollar) that it became synonymous with "buck."

The seasonal take of deer skins allowed the first Anglo-American hunters to pay off their notes of credit and re-supply their hunting parties with powder and ball, as well as shirts, rifles, knives, soap and other necessities.

As the Lewis and Clark expedition traveled up the Missouri River in 1804, hunters had no trouble keeping the party in fresh meat. Elk and black bears were mentioned frequently in the captains' journals, but white-tailed

deer were their mainstay, feeding the expedition's 40-plus crew and allowing them to conserve supplies for leaner times ahead. On June 16th, 1804, near present day Saline county, Clark wrote,

"we Came to the Camp of our hunters, they had two Bear & two Deer..."

Due to the diligent efforts of citizens and conservation employees, the deer has returned to its historic range. Today it is the most abundant of all big game animals and is once again an essential part of our culture.



On June 24, near present day Jackson County, Clark noted,

"...The Countrey on each Side of the river is fine interspersed with Praries, in which imence herds of Deer is Seen, on the banks of the river we observe numbers of Deer watering and feeding on the young willow, Several Killed to day."

In the wake of Lewis and Clark, settlers pushed across the Mississippi and up the Missouri, building cabins and houses to replace the temporary camps and half-faced shelters of the woodsmen who had penetrated the frontier ahead of them and continued on in their nomadic pursuits.

Frontier farmers needed logs for cabin walls and rail fences, but they relied on deer for their food and clothing. As they cut clearings in the forest and plowed the sod, the farmer pioneers created perfect conditions for lush new growth favored by whitetails, and deer numbers flourished. Some herds reportedly contained hundreds of deer.

Deer were so numerous that in 1841, a saddle of venison could be bought in most of Missouri for between 75 cents and \$1.

Relentless pressure from the guns of settlers, and from market hunters eventually took their toll, however. Deer populations around settlements like St. Genevieve and St. Louis began to decline dramatically. The few deer that remained were found in remote Ozark forests and in the prairies.

The mid-1800s brought steamboats and railroads and more rapid change. The human population swelled, and the impact on the land accelerated. Plows chewed at the prairies, and hungry rural people began to substitute beef for venison.

In 1841, Missouri passed its first game law. It restricted the taking of whitetails to five months of the year, but a lack of enforcement made the new law ineffective. Meanwhile, facing the challenges of free-ranging livestock, unregulated timber cutting and year-round hunting, deer numbers continued to spiral downward. By 1910, deer could be found only in one or two counties north of the Missouri river, and in the marshy Mississippi lowlands and the rugged Ozark hills.

According to most estimates, by 1925, there were fewer than 400 deer remaining in Missouri. The wild creature that had been so much a part of Missouri's heritage and that had been so crucial to its inhabitants for centuries had become only a memory in most of the state.

In 1936 the newly established Conservation Department directed its efforts to restoring white-tailed deer by

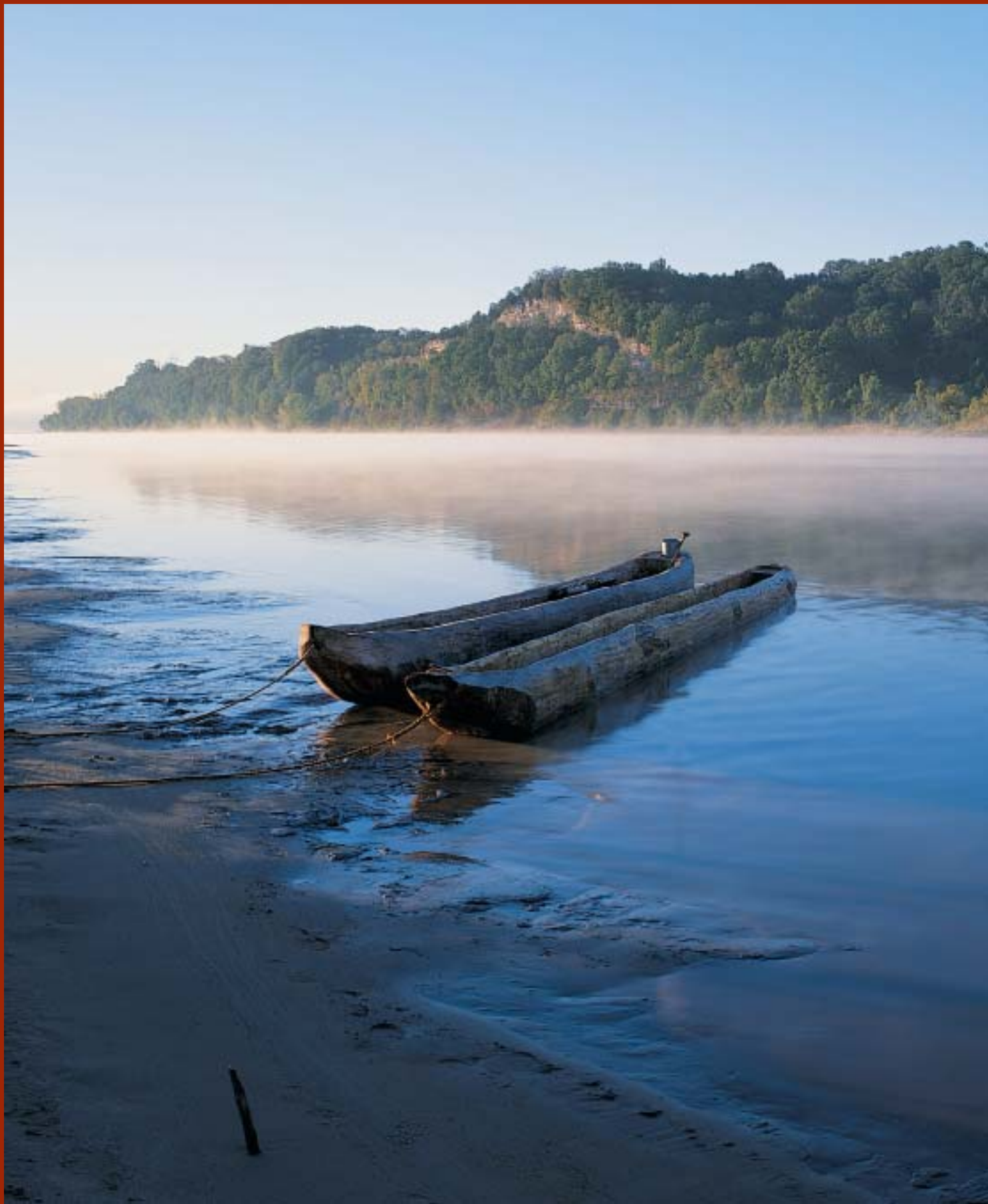


trapping deer in the Ozarks and relocating them to other parts of the state. From 1937 to 1957, they moved 2,343 deer from refuge areas to 70 release sites in 54 counties.

Due to the diligent efforts of citizens and conservation employees, the deer has returned to its historic range. Today it is the most heavily hunted and abundant of all big game animals.

Deer hunters also add hundreds of millions of dollars to Missouri's economy each year. In 2002, for example, they contributed \$711.5 million as they spent money on clothing, food, motels and campgrounds, vacations, guns, ammunition, bows and other hunting equipment. Still others bought land specifically to have a good place to hunt deer.

It's hard to imagine that the wild animal that provided sustenance for Indians, explorers like the Corps of Discovery and Missouri's first settlers could still have important cultural and economic impacts on our lives today and into the future. ▲



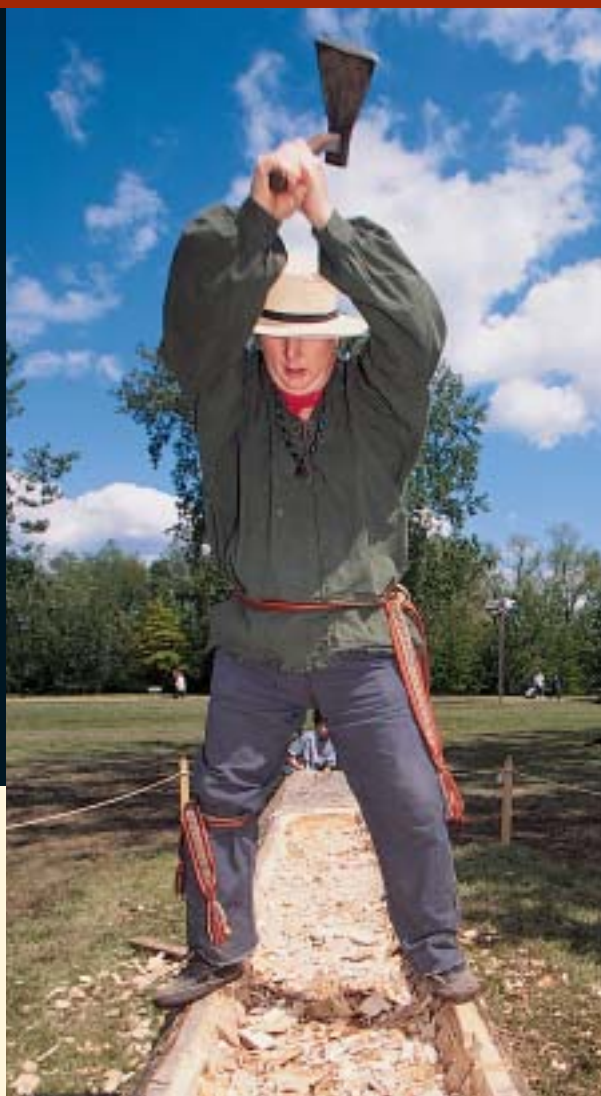
Pat Whalen

Digging into “dugout” history

Depictions of the Corps of Discovery’s voyage on the Missouri River typically portray the expedition’s keelboat. But did you know the explorers made three-quarters of the trip in dugout canoes? These versatile, easy-to-make cargo carriers were the 18-wheelers of their day.

A dugout canoe is just a log that has been hollowed out. The Corps of Discovery once built three dugout canoes in two days. You can make one, too, although it probably will take you a little longer.

First, find a suitable tree. Your log must be straight and free of limbs or knots that could



Cliff White

Step into the
pages of history
by making a
dugout canoe like
the ones Lewis
and Clark used.

By Jim Low

cause leaks. Almost any species will work, but cottonwoods are preferred. Big cottonwoods are plentiful, and their wood is soft and straight-grained, making it easy to work.

Some of Lewis and Clark's dugouts were more than 30 feet long, but anything longer than 10 feet and broad enough to accommodate your own girth is adequate. Dugouts are heavy, so choose a size that will be manageable when you have to move it.

Make the thickest end of the log the stern of your canoe. To decide which surface of the log goes on the bottom, place the log on a flat surface. Roll the log to check for curvature. Put the outside of any natural curve on the bottom of the finished canoe.

The next step is to flatten the bottom of the canoe. This will allow you to work on the upright log safely. Roll the log onto its top and secure it with blocks on both sides. With a carpenter's chalk line, snap a straight, horizontal line along each side of the log a few inches from the bottom (which is now on top). Cut off the rounded slab of wood above the line.

Before righting your log, drill a series of 3/4-inch holes



Using traditional tools, Conservation Department employees have created a small fleet of dugout canoes for display at Lewis and Clark events.

Modern Dugout Fleet

To highlight the Missouri River's economic, recreational and environmental values, Conservation Department workers have created a small fleet of dugout canoes that tour state and county fairs, regional school events and frontier festivals. These replicas of historic canoes range from 12 to 35 feet long. They are accompanied by people in traditional clothing who explain how the canoes were made and the historic role they played. To arrange a visit to your community, call 573/522-4115, ext. 3256.

at 3-foot intervals along the center line of the canoe bottom. These "gauge holes" will allow you to gauge how thick the floor of your canoe is when chopping out the interior. Make the holes as deep as the desired thickness of the canoe floor. For very large canoes, this might be as much as 4 inches. For a 12-footer, 2 inches is enough.

Now, roll the log onto its flat bottom and snap a straight line on each side to mark the top of the gunwales. You want to create a flat surface wide enough to accommodate passengers in the hollowed-out canoe while leaving sturdy side walls. Draw a diagonal line from the top of each end to the bottom of the log, marking the tapered bow and stern.

If speed, rather than historical accuracy, is your goal, you can use a chainsaw to rough out the canoe. Traditionalists may choose to use hand tools. A broad ax is best for flattening top and bottom. For chopping out the interior of the canoe, you need a foot adze or a ship-builder's adze. These are like axes with the cutting edge turned sideways.

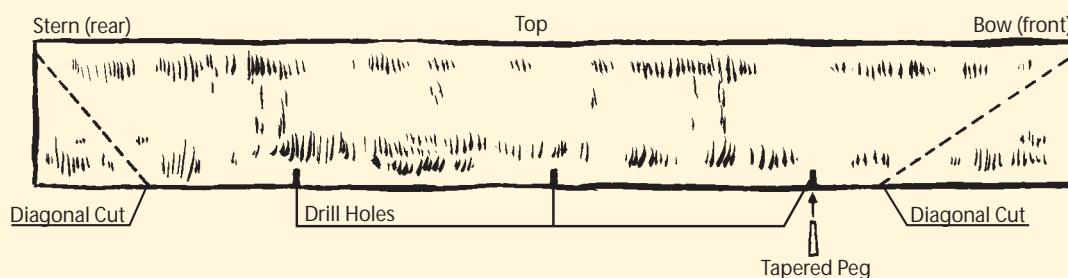
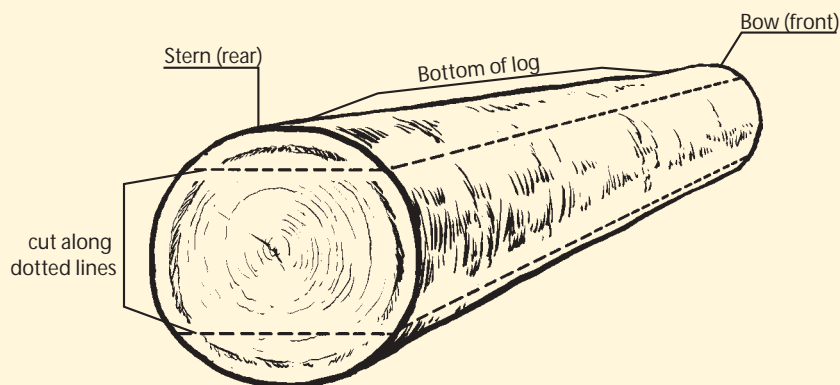
When hollowing out the log, stand on top near one end. Chop a notch into the wood across the width of the top, leaving a space on each side for the gunwale. Then turn and stand on the opposite side of the notch. Swing the adze so it strikes near where you stood before, 4 to 6 inches from the notch you just created. You should pop out a wood chip about an inch thick with each chop. Follow this vertical working surface to each end of the canoe, and then start over again with a new notch. You will be surprised how fast the work goes if you sharpen the adze periodically with a file.

Smooth the rough surfaces with draw knives and gouging adzes. Drive tapered pegs into the gauge holes, and your canoe is ready for the water.

Cottonwood cracks when it gets dry, so leave your canoe in the water or keep water inside when not in use. The best protection in winter is to sink the canoe in shallow water, using rocks to keep it submerged. ▲

The Basics of Crafting a Dugout Canoe

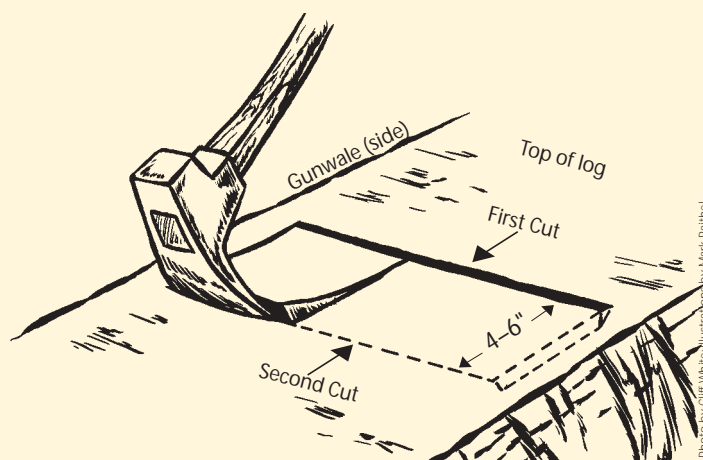
- 1) Remove bark from a log that is no smaller than 10–12 feet long.
- 2) Place the log bottom up, and chalk the lines for the top and bottom cuts.
- 3) Drill three-fourths inch holes at three inch intervals about two inches deep along the center of the bottom of the log as depth gauge holes.
- 4) After the bottom is cut, roll the log over and cut the top of the log.
- 5) Mark and cut diagonal lines for the bow and stern.



- 6) Chop a notch with an adze the width of the log, leaving space on each side for the gunwales.
- 7) Turn and stand opposite of the first cut, using an adze make a second cut 4-6 inches away from the first cut. A wood chip about 1 inch thick should pop out.

TIP: With the adze sunk on second cut, apply pressure downward on the adze handle to pop out chip.

- 8) Continue to chip out layers of log until the depth gauge holes are reached.
- 9) Using wooden, tapered pegs, fill the depth gauge holes. Cut off excess peg.
- 10) The canoe interior can be finished or smoothed with draw knives and gouging adzes.



Cutting Tool Safety

Adzes, axes and draw knives can inflict serious injury if used carelessly. Wear safety goggles, gloves and steel-toed work boots. Work slowly and with minimum force until you get a feel for the tools. Never work in close quarters with other people, and quit working when you begin to get tired.



Tool Suppliers

You may have trouble finding suitable tools at your local hardware store for dugout canoe building. Several mail-order companies sell foot adzes, gouging adzes, draw knives and other unusual pioneer tools. These include Lehman's of Kidron, Ohio: www.lehmans.com, 888/438-5346.



Commemorating the Bicentennial

Lewis and Clark began their epic journey up the Missouri River on May 14, 1804, but our nation's bicentennial commemoration of Lewis and Clark's epic journey officially started in January 2003, at Thomas Jefferson's home, Monticello, at Charlottesville, Virginia.

The National Council for the Lewis and Clark Bicentennial has identified 15 "National Signature Events" marking significant milestones, turning points or achievements of the Lewis and Clark Expedition.

The first of four national signature events taking place in Missouri is the Three Flags Ceremony. This event, marked for March 10–14, commemorates the transfer of Upper Louisiana from Spain to France to the United States. The event culminates



Missourians will
not be left
wanting for
Lewis and Clark
programs during
this year of
celebration

By Shannon Cave
Photos by Cliff White

with a ceremony on the Gateway Arch grounds March 14. It will include governors of the Louisiana Territory states and performances by the French Air Force Band and the U.S. Army Band's Old Guard in period dress. For more information contact Dr. Wendell Smith, University of Missouri-St. Louis, St. Louis, 314/516-5255, or visit <www.ums1.edu/~loupurch/3flags.html>.

From May 14 through May 23, the city of St. Charles will commemorate the national signature event titled, "Preparations Complete, The Expedition Faces West." May 14 also marks the start of the St. Charles 25th Annual Lewis and Clark Heritage Days Festival. You can to see replicas of keelboats and pirogues (canoes made from hollowed tree trunks), see reenactors in period dress, learn about 19th-century crafts, and taste 19th-century foods.

For more information, contact Venetia McEntire, St. Charles Lewis & Clark Bicentennial Commission, 800/366-2427, visit <www.lewisandclarkstcharles.com>.

The event labeled "A Journey Fourth," which is scheduled for July 3-4 in the Kansas City area, marks the first Independence Day observance west of the Mississippi River. In 1804, the expedition celebrated the holiday with two cannon blasts. In 2004, organizers plan nearly three weeks of Lewis and Clark commemorative activities, including an air show and a spectacular fireworks displays.

For more information, contact Emilie Jester, Heart of America: A Journey Fourth, 1100 Main, Suite 2200, Kansas City, 800/858-1749 or online at <www.journey4th.org>.

The event marking the return of Lewis and Clark will take place in St. Louis on September 23, 2006.



Lewis and Clark links

- * All events: www.lewisandclark.state.mo.us
- * National signature events: www.lewisandclark200.org/calendar/signature_events/sig_events2.html
- * Keelboat: <http://lewisandclark.net/>
- * Corps II: <http://www.lewisandclarkgnet.org/>
- * Outpost: <http://www.moriver.org/>
- * Dugouts: jim.duncan@mdc.mo.gov, 573/522-4115 X 3256
- * National Exhibit: www.lewisandclarkexhibit.org
- * Traveling exhibits: nrgrelc@dnr.state.mo.us or 573/751-2854.

For more information about all 15 national signature events, go to <www.lewisandclark200.org/calendar/signature_events/sig_events2.html>.

Many communities, organizations, government agencies and even private businesses are planning bicentennial anniversary programs to coincide with these national signature events. These festivals or programs offer both a glimpse into the past and an opportunity to learn about modern river issues. Even if education or celebration is not your goal, these programs and events offer everyone a chance to reacquaint themselves with the marvelous Missouri River.

The Keelboat

Discovery Expeditions of St. Charles is Missouri's official reenactment group. It travels the rivers in replica boats—one keelboat and two pirogues.

The group started retracing Lewis and Clark's water route near Pittsburgh, Pa., in August 2003. After spending this winter camped in Illinois, they will move through Missouri between May 14 and July 17.

Their 1804 attire, river savvy and authentic encampments thrill crowds and students wherever they stop.

Corps II

Corps of Discovery II is a national traveling exhibit developed by the U.S. National Park Service and supplemented by Missouri's Lewis and Clark Bicentennial Commission.

Ten Missouri stops, including one in Cape Girardeau last Thanksgiving, feature an exhibit tent telling the story of the original Corps of Discovery, as well as a 150-seat program tent (heated and air conditioned) called the Tent of Many Voices. TOMV will present 8 hours of programming daily, featuring a variety of programs by national, state and local experts.

Programs and exhibits from Missouri state agencies will

accompany Corps II, and help coordinate activities with local communities and schools. In 2004, Corps II will visit St. Louis, Springfield, Ste. Genevieve, St. Charles, Jefferson City, Boonville, Sibley, Kansas City and St. Joseph.

Outpost

The Exploration Outpost is a project of the Missouri River Communities' Network, a non-profit group, and Americorps, a national volunteer program. Its mobile encampment of tents with information and education programs can move quickly and will visit many small towns along the Lewis and Clark route.

Dugouts

Conservation Department staff in period attire will provide programs and have several dugout canoes and replica keelboats displayed at many schools and events on the trail and throughout Missouri.

Educational programs also will take place at conservation areas and at Conservation Nature Centers throughout the year.

Exhibits

The Missouri Historical Society has the premier national exhibition of artifacts surviving from the original Lewis and Clark Expedition. It will be in St. Louis' Forest Park from January 14 to September 6. From there it will move to Philadelphia, Portland, Denver and Washington D. C. before closing in 2006.

A traveling version of that exhibit can be provided to any community in Missouri. The Missouri State Museum (573/751-2854) handles reservations. Other exhibits of art, maps, botanical specimens, and other aspects of the expedition are also being shared by many communities.

Information about community plans is constantly changing, so consult local sources for dates and schedules. The most current source of schedule information is the Missouri Lewis and Clark Bicentennial Commission. You can find a calendar of events at <www.lewisand-clark.state.mo.us> or call 800/334-6946. Local newspapers are the best source of local information, and Conservation Department offices can tell you when conservation staff will have programs or exhibits.

Exhibits, festivals and reenactments are a great way for people to connect with the epic story of Lewis and Clark.

During and after 2004, many communities are undertaking Bicentennial legacy projects. These projects are to capture something of the spirit and determination of the members of the Corps of Discovery. Prime examples include the recently completed St. Charles Lewis and Clark Boat House and Cape Girardeau's Lorimier Red



A multitude of fairs, festivals and traveling exhibits provide Missourians many opportunities to connect with the epic story of Lewis and Clark and the Corps of Discovery.

House. Fort Osage, in Jackson County, will have a new visitors center in a few years. Several communities, including Kansas City, St. Charles and Jefferson City, have or will erect new statues.

Lewis and Clark interpretive signs are being erected at public vantage points to the river and the Lewis and Clark Trail, including at nearly 40 conservation areas. These signs tell the story of the expedition in Missouri site-by-site. Reading the signs at each stop is like turning pages in an adventure story.

These signs are part of the efforts of state agencies and communities to rekindle interest in our two great rivers. Many communities are renovating or improving their river frontage by adding trails, parks, boat ramps and, in some cases, marinas. These renovations may have been triggered by the bicentennial, but the facilities will benefit the communities and river recreationists for decades.

The Lewis and Clark Bicentennial commemoration not only looks back to the heroic exploits of Lewis and Clark and their crew, it also gives us a chance to pass on an appreciation of natural resources to our grandchildren, great grand children and beyond. ▲



MISSOURI DEPARTMENT OF CONSERVATION

Annual Report *Fiscal Year 2003*

This summary of the Annual Report highlights the Conservation Department's financial transactions and year-long accomplishments from July 1, 2002, through June 30, 2003. The Conservation Department made \$668,907 in payments to Missouri counties in lieu of taxes, and also reimbursed counties \$291,824 for land enrolled in the Forest Cropland Program.

► **Continued offering landowner deer and turkey permits** for qualifying nonresidents at reduced price. Beginning with the spring 2001 turkey season, qualifying nonresident landowners were able to purchase deer and turkey hunting permits at reduced prices. To qualify, nonresidents must own a minimum of 75 contiguous acres within a single management unit.

► **Protection agents made 204,395 resource contacts**, noted 25,378 wildlife violations, issued 3,800 written warnings and made 7,581 arrests. Agents reported teaching hunter safety to 37,485 students. In addition, agents attended public events, displayed 1,060 exhibits, made 9,864 appearances on radio/TV programs.

► **Operation Game Thief** logged 539 calls, resulting in 142 convictions. Informants were paid \$11,300 in rewards leading to arrests of *Wildlife Code* violators. Also, 1,826 hunters donated more than 96,595 pounds of venison to the needy through the "Share the Harvest" program.

► **Managed Deer Hunt Program.** The Department provided additional deer hunting opportunity through the Managed Deer Hunt Program. Overall, 5,671 hunters harvested 2,099 deer during 71 hunts at 36 locations.

► **Rural fire departments received help** through training and grants. More than \$200,000 was distributed to 138 fire departments for the purchase of safety and fire-fighting equipment. The Department trained volunteer firefighters on natural cover fires.

► **Expanded Dove Hunting Opportunities.** The Conservation Department has quadrupled the number of specially managed fields to provide additional opportunities for dove hunters on Department-owned conservation areas.

► **The Natural Areas system** was expanded by more than 2,300 acres and now contains more than 180 areas with 59,600 acres protecting the best examples of Missouri's terrestrial and aquatic natural communities.

► **Expanded deer hunting opportunities** for firearms hunters by making all Any-Deer permits valid statewide, increasing

the number of units where Second Bonus permits are valid, and increasing the number of units open during the Antlerless-Only portion.

► **CWD Testing:** Department personnel tested approximately 6,000 deer, taken from one-third of Missouri's counties during the 2002 Firearms Deer Season, for chronic wasting disease. All tests were negative, meaning CWD was not detected. Testing will continue through the 2005 Firearms Deer Season.

► **Private Land Service's field staff** made more than 5,000 on-site landowner visits to provide technical assistance in 2002. In addition, numerous habitat management workshops and field days were conducted across the state to help private landowners achieve their land use objectives while enhancing the conservation of Missouri's natural resources.

► **Walleye Restoration** in the St. Francis River. Beginning March 1, 2003, anglers were allowed to harvest walleye in the St. Francis River above Wappapello Lake. Starting in 1996, the Conservation Department began a walleye restoration project by stocking nearly 200,000 small walleye in the river above Wappapello Lake. Walleye fishing in the upper St. Francis River had been limited to catch-and-release only.

► **St. Louis City Lake Renovations.** Lake renovations were completed at Forest Park and Carondelet Park. Jefferson Lake in Forest Park and Horseshoe Lake in Carondelet Park, both public fishing lakes, were deepened to provide improved fish habitat. Jefferson Lake also received an aeration system and a fishing platform. Four youth-only fishing ponds and a successional wetland were created in the hatchery area of Forest Park.

► **Missouri River Accesses.** Several accesses in the Kansas City area were developed through the Community Assistance Program. They are at LaBenite Park, Riverfront Park and Fort Osage. In addition, Stump Island Access in central Missouri was completed. Significant progress was made on other Missouri River access projects through CAPs, including Pelican Island near St. Louis, Lexington and Parkville.

► **Lost Valley Hatchery staff** raised more than 17,000 endangered Topeka shiners. The Department demonstrated for the first time that it can successfully raise a large number of these endangered fish. As a result of this success MDC will collect Missouri fish from the two remaining populations in Sugar Creek in Harrison County and Moniteau Creek in Cooper County. All fish raised will be used for re-introduction into the state.

► **Bat Management Plan:** The MDC and other partners began developing a bat conservation plan for Missouri. The plan will include: ecological considerations for the different species in Missouri, strategies for population monitoring, recommendations for managing caves and mines and surface habitats, research needs, urban bat issues and public health, partnerships, and education.

► **Increased gypsy moth detection efforts.** Conducted trapping for gypsy moths in 27 counties. Increased number of traps from 2,100 to 4,500 traps.

► **Conducted the Third Youth-Only Spring Turkey Season.**

During the special, two-day turkey season for resident youths age 15-years and younger, 19,000 participants harvested 3,660 birds, of which 72 percent were mature. There were no reported accidents.

► **Conducted the Second Youth-Only portion of the firearms deer hunting season.** During the two-day portion of the 2002 season, nearly 40,000 youth hunters harvested 7,727 deer. There were no reported accidents.

► **Coordinated efforts** of 2,200 volunteers who donated time, expertise and labor to monitoring and protecting streams and to conservation projects and education.

► **Combined the Fish Forest and Wildlife Research sections** and many Natural History programs into the new Resource Science Division. Also added a Wildlife Diversity Section to the Wildlife Division. These changes better serve non-game research and management, progress on threatened species, protection of Natural Areas and citizen groups committed to these efforts.

What the Money Bought — Fiscal Year 2003

Forestry — \$14,903,199

Conservation Department programs foster a healthy and growing forest resource. Examples include distributing 5.53 million seedlings for planting to nearly 13,185 landowners, developing 94 Landowner Forest Stewardship Plans, bringing an additional 13,733 acres under total resource management, managing 438,700 acres of public forest land, developing the state's forest industry and conducting research on trees and forests.

Wildlife — \$15,930,146

Conservation Department programs ensure wildlife populations that are in harmony with habitat and human enjoyment. Managed 501,066 acres of public land and conducted programs to monitor game and non-game species, develop wetlands, restore wildlife and control wildlife damage.

Fisheries — \$14,293,493

Fishing is one of the most popular outdoor activities in Missouri. In 2002, the Conservation Department sold 1,386,519 resident and non-resident fishing permits and tags of all types to 846,155 people. The agency produced 7,294,188 fish for stocking in various waters. The Conservation Department manages 849 public impoundments totaling 277,055 acres of water.

Natural History — \$2,438,957

Coordinated and provided overall and specialized services to the Department's natural areas, endangered species programs, wildlife diversity and natural community conservation and management programs, as well as programs to promote public appreciation of natural resources.

Law Enforcement — \$15,191,299

Paid for law enforcement, resource management, information, education and public service contact activities conducted by 167 conservation agents. Conservation agents, along with 2,200 volunteer instructors, conducted 1,062 classes and certified 32,328 students.

Outreach and Education — \$13,169,371

Sustained and nourished Missourians' connection to the outdoors by providing educational materials, schoolteacher contacts, outdoor skills programs, the *Missouri Conservationist* magazine, TV show, books, videos, informational programs, staffed shooting ranges and Conservation Nature Centers.

Private Land Services — \$6,172,255

Newly established division provides resource education and technical assistance to private landowners to conserve forest, fish and wildlife resources.

Administration — \$3,337,572

Paid for general region expenses and equipment, auditor, legal counsel, planning, environmental coordination, local government assistance, summer help and other administrative functions.

Administrative Services and Human Resources— \$30,079,223

Paid for human resources, federal reimbursement administration, hunting and fishing permit point-of-sale system, fiscal services, aviation services, fleet management, building and grounds maintenance, information management and technology and other essential services.

Land Acquisition, Landowner Assistance, In-Lieu Taxes — \$2,016,669

In lieu of tax and forest cropland payments, which included levee and drainage district taxes, totaled \$960,731 to 113 counties. The four largest payments were to Shannon (\$76,165.02), St. Louis (\$50,202.04), Howard (\$39,403.10), and Holt (\$32,734.64) counties. Since 1980, more than \$9.44 million has been returned to Missouri counties under the Payment in Lieu of Taxes program.

Construction & Development — \$14,771,828

Paid for outstate service centers, hatchery improvements, wetland development, river access site development and other construction.

Design and Development — \$8,870,367

Paid for engineering, construction administration and architecture.

Receipts



Conservation Sales Tax	\$89,855,329
Permit Sales	\$29,935,814
Federal Reimbursements	\$13,810,531
Sales and Rentals	\$6,688,103
Interest	\$744,851
Other Sources	\$3,149,179
Total Receipts	\$144,183,807

Disbursements



Construction & Development	10.5%
Wildlife	11.3%
Forestry	10.6%
Administrative Services & Human Resources	21.3%
Protection	10.8%
Outreach & Education	9.3%
Fisheries	10.1%
Design & Development	6.3%
Land Acquisition/in-Lieu of Taxes	1.4%
Private Land Services	4.4%
Natural History	1.7%
Administration	2.4%
Total Cash Disbursements	\$141,174,379

Missouri State Budget



Health & Social Services	36.4%
Education	29.1%
Government Services	21.1%
Transportation	9.8%
Natural & Economic Resources	2.8%
Conservation	0.7%
Total State Budget	\$18,489,981,393

(MDC less than 1% of total state budget)



Jim Rathert

Watch eagles this month

If you want to see bald eagles this month, visit the Conservation Department river access below Bagnell Dam or Willmore Lodge at Lake of the Ozarks Jan. 3-4. Another eagle watching event will take place Jan. 17-18 at the Chain of Rocks Bridge in St. Louis.

The events are free, and telescopes will be available for visitors to use. Staff from the World Bird Sanctuary will be on hand at Willmore Lodge with live eagles. You also can take an "Eagle Watch" cruise on the paddle wheeler Tom Sawyer Jan. 3 for \$4 per person. Cruises will leave at 11 a.m., noon, 1 p.m. and 2 p.m. The rain date for the cruises is Jan. 4. Additional information is available from the Lake Area Chamber of Commerce, 800/451-4117.

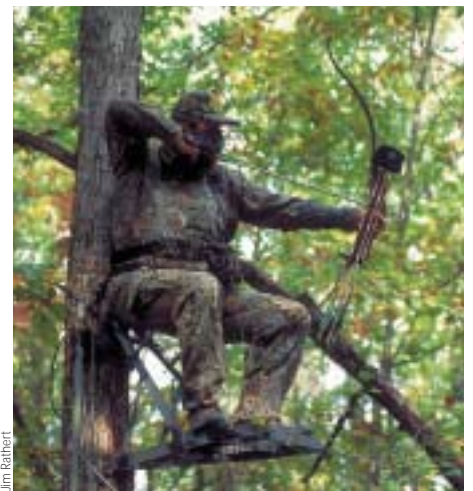
The events will take place Jan. 3 from 9 a.m. to 4 p.m., and on Jan. 4 from 10 a.m. to 4 p.m.

The St. Louis' Chain of Rocks Bridge will be the site of another Eagle Days event from 8 a.m. to 4 p.m. Jan. 17-18. Eagle education programs will be offered every half hour from 10 a.m. until 2:30 p.m. Lewis & Clark re-enactors will be on hand with a circa 1804 encampment for visitors to see. Call 314/416-9930, or visit www.trailnet.org and click on key word "events" for more information.

BOWHUNTERS GATHER in Jefferson City

Avid bowhunters won't want to miss the United Bowhunters of Missouri's annual festival at the Jefferson City Ramada Inn Feb. 6-8. The event will include seminars, auctions, raffles and equipment displays by custom bowmakers and other vendors.

Also slated are a photography contest, displays of game mounts and the annual awards banquet on Saturday night. Guest speakers will include Fred Eichler of Full Draw Outfitters and world-traveling bowhunter Monty Browning. For more information, call 573/243-7113 or 636/742-4947.



Jim Rathert

DOGS AND LANDOWNERS

The Conservation Department frequently receives questions from dog owners, landowners and hunters about laws pertaining to free-running dogs. A common question asked is, "Can free-running dogs be killed?"

Missouri Revised Statutes, Chapter 273, Section 273.030, makes it clear that the only circumstances in which free-ranging dogs can be killed is when

dogs are encountered chasing and/or killing sheep or other domestic animals. Dogs that merely enter private property may not be killed.

Dogs are also considered personal property. Anyone killing a dog under circumstances other than the narrow ones described above expose themselves to significant legal difficulty. Dog killings are investigated by local law enforcement authorities, not by conservation agents. Those who kill dogs may be forced to pay restitution and/or face criminal charges.

We can keep free-running dogs from becoming a problem if dog owners, landowners and hunters respect one another's interests. Owners should keep dogs from hunting on private property without permission, but dogs will sometimes follow game onto private property despite the dog owners best efforts to restrict them. The chasing or killing of domestic animals are the only circumstances in which dogs may be killed.



Jim Rathert



Jim Rathert

Farm bill partnership will benefit landowners

Conservation Department Director John Hoskins (left) and State Conservationist Roger Hansen of the Natural Resources Conservation Service (right) recently signed an agreement to cooperate in delivering services to landowners through the 2002 Federal Farm Bill. The two agencies will share costs of implementing fish and wildlife conservation programs statewide. Farm bill provisions have far-reaching effects on fish and wildlife by offering incentives for farmers to use conservation-friendly management practices.



Lisa Allen

Steve Eder

New leaders for Fisheries, Private Land Services divisions

The Conservation Department has chosen agency personnel with a wealth of field and administrative experience to lead two of its Private Land Services and Fisheries divisions.

Lisa Allen of Jefferson City was named in October to lead the Private Land Services Division. She replaced George Seek, who led the division since its formation in 1999. Allen holds Bachelor's and Master's degrees in forestry from the University of Missouri-Columbia. Before taking over as Private Land Services Division administrator, she worked for five years as one of two management chiefs in the Forestry Division. Other jobs she has held with the Conservation Department include forestry field programs supervisor, resource forester and assistant resource forester.

"I'm excited about leading the Private Land Services Division," Allen said. "Most of Missouri is privately owned, so that's where conservation has to succeed or fail. Cooperation between the Conservation Department and private landowners is critical to keeping healthy, diverse forests, fish and wildlife. I want to make sure that landowners have the tools they need to succeed at conservation."

Steve Eder of Jefferson City was named in October to lead the Fisheries Division. He replaced Norm Stucky, who led the division since 1997. He holds a Bachelor's degree in Fishery and Wildlife Biology from Michigan State University and a Master of Science degree in Fishery Biology from Colorado State University. Before taking over as Fisheries Division Administrator, Eder worked as fisheries field operations chief and fisheries management supervisor in the central office, and as a fisheries regional supervisor and a fisheries management biologist in northwest Missouri.

"I feel very fortunate to have spent my entire career working in Missouri," Eder said. "Our citizens are enthusiastic about the outdoors and appreciate the diversity of our natural resources. Witnessing the strong support that Missourians show for conservation day in and day out, makes a person want to serve the public to the best of his or her ability. The opportunity to serve as the Fisheries Division Administrator is a professional dream come true for me."

Cliff White

Tree Farm conference set

Private landowners in Missouri are invited to attend the 24th annual Tree Farm Conference, Feb. 27-28, at the Country Club Hotel at Lake of the Ozarks.

This year's Friday afternoon field workshop will highlight best management practices. A Friday evening session will allow attendees to consult with state and private professional foresters. The Saturday conference will focus on tree care and forest management for wildlife.

Registration before Jan. 28 is \$45 for individuals and \$80 for couples. After that date, the prices are \$50 for individuals and \$90 for couples. Registration includes continental breakfast, breaks, buffet luncheon and conference materials. For more information, contact Hank Stelzer, University of Missouri, 203 ABNR Bldg, Columbia, MO 65211, 573/882-4444, stelzerh@missouri.edu.

Big Buck Extravaganza

Missouri deer hunters can begin the new year in style at the Missouri Show-Me Big Bucks Club Deer Classic Feb. 14-15 at the State Fairgrounds in Sedalia.

The event will be held Saturday and Sunday at the Mathewson Exhibition Center and Assembly Hall. At least 50 official Boone & Crockett Club measurers will be present to measure and score deer racks. A display board will also be erected that can display as many as 500 mounted deer heads. These mounts will feature some of the biggest bucks taken during Missouri's 2003 deer seasons.

In addition, the event will feature many exhibits and seminars. Among these will be white-tailed deer biology and management by Lonnie Hansen, a wildlife research biologist with the Missouri Department of Conservation, wild turkey biology and management by MDC Research Biologist Jeff Beringer; small game management on private lands by MDC Private Lands Conservationist Kathy Cooper, farm pond management by MDC Fisheries Management Biologist Trish Yasger, and wild game calling by the MDC's Ralph Duren.

For more information, call the Missouri Show-Me Big Bucks Club at 660/947-3650.



Jim Rathert

Outdoor Calendar

HUNTING	OPEN	CLOSE
Coyotes	5/12/03	3/31/04
Deer/Turkey, Archery	11/26/03	1/15/04
Squirrels	5/24/03	1/15/04
Pheasants		
North Zone	11/1/03	1/15/04
Quail	11/1/03	1/15/04
Rabbits	10/1/03	2/15/04
Ruffed Grouse	10/15/03	1/15/04
Furbearers	11/20/03	1/20/04
Crows	11/1/03	3/3/04
Turkey (spring)	4/19/04	to be announced
Waterfowl	varies by zone	

FISHING

Black Bass (most southern streams)	5/24/03	2/29/04
Trout Parks	3/1/04	10/31/04
catch and release (Fri.–Sun.)	11/14/03	2/8/04
Bullfrog & Green Frog	Sunset 6/30/04	Midnight 10/31/04
Nongame Fish Stream Giggling	9/15/03	1/31/04

TRAPPING

Beaver	11/20/03	3/31/04
Coyote	11/20/03	2/20/04
Otters & Muskrats	11/20/03	Varies
see regulations for otter zones, limits and dates		
Other Furbearers	11/20/03	1/20/04

For complete information about seasons, limits, methods and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, the *Fall Deer and Turkey Hunting Information*, *Waterfowl Hunting Digest* and the *Migratory Bird Digest*. To find this information on our Web site go to <http://www.conservation.state.mo.us/regs/>.

The Conservation Department's computerized point-of-sale system allows you to purchase or replace your permits through local vendors or by phone. The toll-free number is 800/392-4115. Allow 10 days for delivery of telephone purchases. To purchase permits online go to <http://www.wildlife-license.com/mo/>.



Jim Rathert

Web site caters to native planters

If you love unique plants and want to attract more birds and butterflies, check out the *Grow Native!* web site, www.grownative.org.

The site has detailed information on more than 300 species of Missouri native perennials, shrubs and trees. It also presents landscape plans, plant lists for sun or shade, and alternatives to non-natives. A new section addresses farm and ranch needs.

One of the newest features, the "Plant Picker," allows a gardener to find plants based on color, habitat value, season interest, and use for cut flowers. Another new feature is a "Supplier Search" that allows you to find plant and seed retailers, landscape designers, installer/maintainers and more. They can search by Zip code or by products and services offered.

To request one of the three new *Grow Native!* guides or for more information about professional membership, contact *Grow Native!*, P.O. Box 180, Jefferson City, MO 65102. — *Judy Allmon*

Buy Natural Events Calendars now

The 2004 Natural Events Calendar awaits your wall. These gorgeous calendars, produced by the Missouri Department of Conservation, are always popular—so buy early.

Twenty-four of the calendar's 32 pages have stunning color photos of Missouri wildlife, plants and landscapes. Date squares keep you posted on what's blooming or nesting and myriad other natural events. The remaining eight pages contain bonus photos, a list of citizen conservation groups and information about other nature-related topics and publications. We've also included a list of monthly tips for native plant gardeners.

The calendar is available for \$5 plus tax at Conservation Department Nature Centers and regional offices. To purchase by mail, contact the Nature Shop, P.O. Box 180, Jefferson City, MO 65102 or call, toll free, 877/521-8632. Shipping and handling charges will be added to mail orders. Calendars also can be ordered online at www.mdcnatureshop.com/.





Program Schedule

Television the way Nature intended!

Broadcast Stations

Cape Girardeau UPN "The Beat" WQTV / Saturdays 8:30 a.m.
Columbia KOMU (Ch 8 NBC) / Sundays 11:00 a.m.
Hannibal KHQA (Ch 7 CBS) / Weekends, check local listing for times
Kansas City KCPT (Ch 19 PBS) / Sundays 7:00 a.m.
Kirksville KTVO (Ch 3 ABC) / Saturdays 5:00 a.m.
St. Joseph KQTV (Ch 2 ABC) / Weekends, check local listings for times
St. Louis KSDK (Ch 5 NBC) / Sundays, 4:30 a.m.
Warrensburg KMOS (Ch 6 PBS) / Sundays 6:30 p.m.

Cable Stations

Branson Vacation Channel / Fri., Sat. 8:00 p.m.
Brentwood Brentwood City TV / Daily, check local listing for times
Cape Girardeau Charter Cable Ed. Ch. 23 / Thursdays 6:00 p.m.
Chillicothe Time Warner Cable Channel 6 / Wednesdays 7:00 p.m.
Hillsboro JCTV / Mondays 12 p.m. & 6 p.m.
Independence City 7 / Thurs. 2 p.m., Sat. 10 a.m. & Sundays 8 p.m.
Joplin KGCS / Sundays 6 p.m.
Mexico Mex-TV / Fridays 6:30 p.m. & Saturdays 6:30 p.m.
Noel TTV / Fridays 4:30 p.m.
O'Fallon City of O'Fallon Cable / Wednesdays 6:30 p.m.
Parkville City of Parkville / First and third Tuesdays of the month 6:30 p.m.
Perryville PVTV / Mondays 6 p.m.
Raymore Govt. Access-Channel 7 / Various, check local listings for times
Raytown City of Raytown Cable / Wed. 10:00 a.m. & Saturdays 8:00 p.m.
St. Charles City of St. Charles-Ch 20 / Tues. 5:00 p.m. and Wed. 10:00 a.m.
St. Louis Charter Communications / Saturdays 10:30 a.m.
St. Louis City TV 10 / Mondays 11:30 a.m., Wednesdays 3:30 p.m.
St. Louis Cooperating School Districts / Wednesdays 9 a.m.
St. Louis DHTV-21 / Mondays 10:30 a.m.
St. Louis KPTN-LP/TV58 / Thursdays 10:00 a.m.
St. Peters City of St. Peters Cable / Various, check local listings for times
Ste. Genevieve Public TV / Fridays 1 p.m., 6 p.m. & 12 midnight
Springfield KBLE36 / Nine times a week, check local listing for times
Sullivan Fidelity Cable-Channel 6 / Wed. 11:00 a.m. and Fri. 7:00 p.m.
Union TRC-TV7 / Tuesdays 3:00 p.m.
West Plains OCTV / Mondays 6:30 p.m.

Meet our Contributors



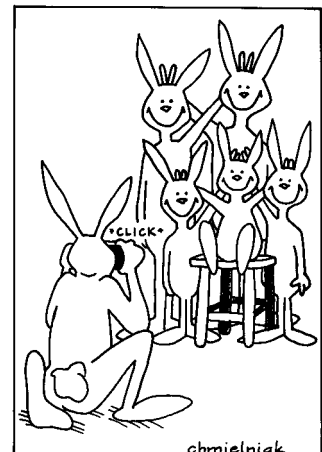
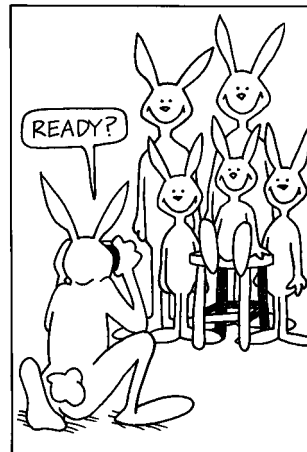
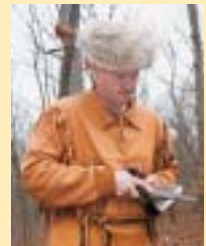
Kyle Carroll has been a Conservation Agent since 1980. A lifelong Missourian, he lives in Maysville with his wife, Sharon, and daughters, Kali and Kelsey. He enjoys hunting with flintlocks and bow and arrow. He said that while patrolling the 400 square miles in his district, he has often thought about the connection of today's hunters and anglers to their predecessors.

Shannon Cave has been with the Conservation Department since 1988, serving in a variety of roles including public information officer, ombudsman, division chief, unit chief and now public involvement coordinator. His favorite task is working with other agencies, communities and interested citizens to build interest in the Lewis and Clark bicentennial, and in Missouri's two big rivers.



Jim Harlan is Senior Research Specialist and Assistant Program Director for the University of Missouri-Columbia's Geographic Resources Center. He was the project director for the Lewis and Clark Historic Landscape Project and co-author of *Atlas of Lewis and Clark in Missouri*. Harlan's Missouri River research findings were featured in the April 2002 *National Geographic* magazine.

Jim Low's interest in dugout canoes stems from his passion for the Missouri River, where much of the epic story of the Corps of Discovery unfolded. You are likely to find him, adze in hand, at dugout canoe appearances around the state.



The rabbit family has its picture taken.



River Shoals

Low water on the Missouri River reveals an exotic landscape shaped by relentless currents. — *Pat Whalen*